

COMPASSTOOLS®

SPECIALIZING IN GIS FIELD DATA COLLECTION TOOLS

Software



Hardware



GIS Services & Solutions



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Ricoh 500SE for Emergency Management Applications

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Materials – Electronic Format

http://www.compasstoolsinc.com/events/ND_GIS_Users.htm

Agenda

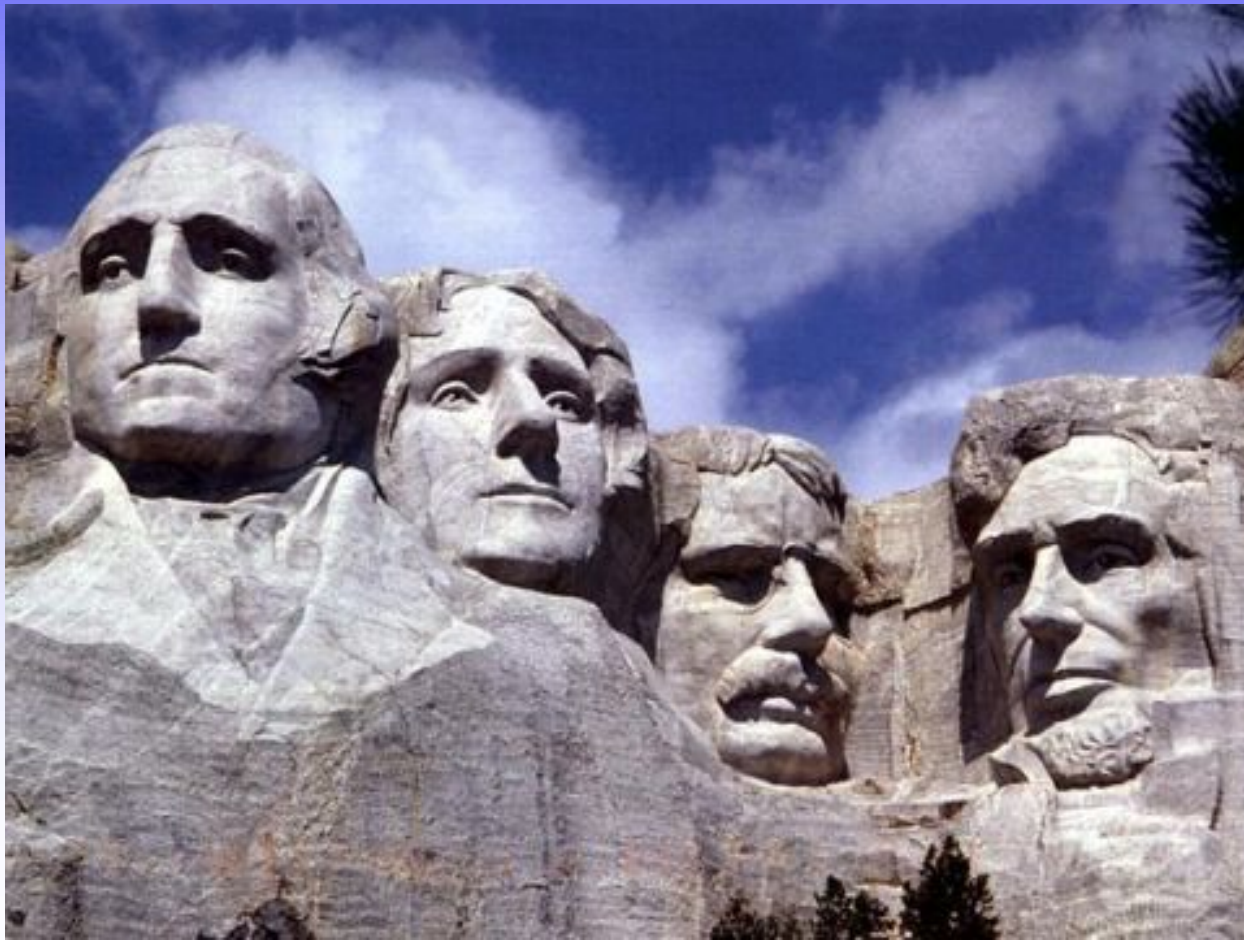
- Why the Ricoh 500SE?
- Specifications and Features
- Setup
- Collection
- Processing



Why the Ricoh 500SE?

- Ever try to figure out where a picture was taken based on what was in the photo...?

Where was this photo taken...?



Where was this photo taken...?



Where was this photo taken...?



Where was this photo taken...?



Where was this photo taken...?



Where was this photo taken...?



Why the Ricoh 500SE?

- Used by FEMA, Military Emergency Management and GIS professionals
- Integrated or External GPS
- Rugged
- Versatile
 - Use with integrated or external GPS
 - Geo-Reference images/videos or transfer photos to another device
- Powerful
 - 8.3 megapixels
 - Up to five memo fields
 - Laser rangefinder and VeriChip compatible
- Processing software options

Specifications & Features

- Rugged - IP67 Rating
- -10 to +40° C
- Water immersion up to .5 meter for at least 30 min
- Dust resistant
- Drop survivability from up to 1 meter

Specifications & Features cont.

■ Lens/Zoom

- 28-85mm equivalent
- 3x Optical Zoom
- 4x Digital Zoom
- 8.3 megapixel images allow additional digital zoom on camera or in office

Specifications & Features cont.

■ Resolution Settings

- Resolution can be adjusted to fit use and storage needs
- Max resolution, ~305 images per 1GB SD Card
- Med settings ~ 800-1300 images
- Low Settings >2,000 images

Specifications & Features cont.

- GPS Lock Function
- For multiple images using same GPS coordinates
- Perfect for taking pictures indoors
- Time-out after 10 minutes

Specifications & Features cont.

- Horizontal accuracy
- 2-5 meters with integrated WAAS
 - Position based on single epoch
 - External Antenna aids reception and accuracy when inside vehicle
- Increase Accuracy with External GPS
 - Sub-Meter, Sub-Foot, even Centimeter
 - Images Stored on Camera
 - » Real-time via Bluetooth from GPS (single epoch)
 - Images Pushed to External GPS
 - » Post processing
 - » GPS averaging
 - » Photos linked to features



Specifications & Features cont.

- Vertical Accuracy
 - Very poor...
 - If vertical accuracy is a concern, external GPS is best option

Specifications & Features cont.

- Geo-Referenced Photos can be collected directly into GIS using FTP protocol
 - ArcPad laptop, tablet PC or mobile device
 - E-mail data from PDA

Specifications & Features cont.

- GPS Acquisition; initialization/time to first fix
 - Cold Boot - 42 seconds
 - Warm boot - 38 seconds
 - Hot start - 1 second
 - Great distance since last use can cause longer initialization times
 - Occasional 20-30 minute windows where satellites unavailable, no skyplot

Specifications & Features cont.

■ Power Consumption

- WiFi and GPS are power hogs
 - » WiFi is optimized for least power consumption
 - » Configure GPS track log interval to balance performance/power needs
- Batteries
 - » Lithium-Ion rechargeable
 - » Vehicle adapter/battery replacement
 - » AA Lithium-Ion or Nickel Hydrogen (for electronics)
 - » **AA alkaline not recommended
- Auto Off function reduces power consumption
- Turning off camera between shots can sometimes create longer initialization times

Specifications & Features cont.

- Scene modes
 - Normal
 - High Sensitivity (low light)
 - “Fire” mode
 - Text modes
 - Macro - great for natural resources and crime scenes

Specifications & Features cont.

- Advanced Shooting modes
 - Stream Continuous Mode
 - » 8 frames/second for 2 seconds
 - » Stored as one max resolution image
 - Memory Continuous Mode
 - » hold shutter button down, to store 8 frames/second to buffered memory
 - » release shutter when desired action has happened
 - » camera stores the 16 frames up to instant shutter was released

Specifications & Features cont.

- Long Exposure Mode
 - 1-8 seconds
- Automatic Interval Mode (Time Lapse)
 - 30 seconds – 3 hours at 30 second intervals
- Advanced ISO, exposure compensation, light metering and lighting conditions configuration settings

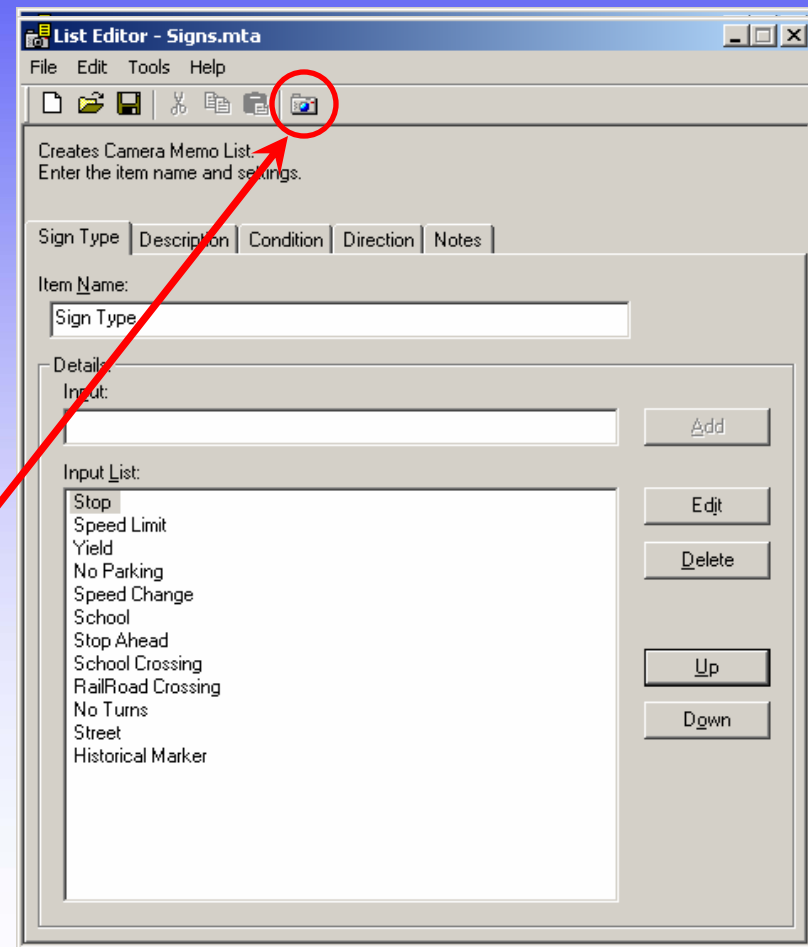
Setup

■ Wireless Communication

- WiFi- direct printing
 - » Direct Print Order Format where digital camera print services are offered
- WiFi – image transfer
 - » FTP protocol
 - » Transfer data to desktop or Laptop/PDA in the field
 - » Secure connection via password/encryption
- Bluetooth – GPS, Laser, EviTrace
 - » Auto Reconnect function

Setup

- Open Ricoh List Editor
- Create any pick lists or memo field descriptions
- Click the camera icon to transfer list to camera



Collection

- Taking photos while moving
 - Anti-blur technology (Fast shutter speed and ISO settings)
 - Walking
 - Driving

Collection

- Collecting Line or Polygon
 - GPS Tracklog can be used to collect GPS bread crumb trail at specified intervals
 - Possible to connect the dots in GIS to create a line or polygon manually or automatically using GPS PhotoLink software

Collection

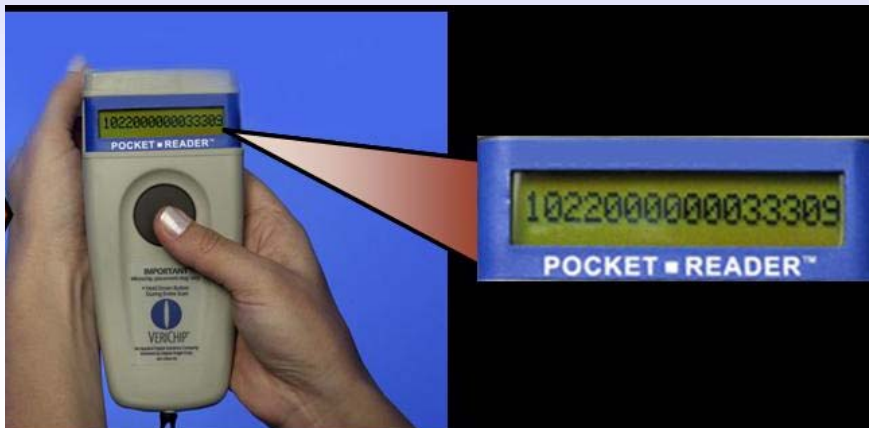
- Capturing a Geo-Referenced Video
 - Switch dial to “Video” mode, point, shoot and pan
 - GPS position is stored for location at time video begins as anchor for AVI file

Collection

- Capturing attributes using memo fields
 - Ricoh List Editor
 - “No Setting” option to leave field blank
 - “Temporary” option for attribute not on list
 - Memo Fields can be viewed and updated
 - Memo Fields can be viewed and edited in CaplioViewer software

Collection

- EviTrace RFID
- Scanner reads RFID chip #, sends data to Ricoh via bluetooth
- Data stored in memo field



Collection

■ Voice Recordings

- can be configured to store automatically for each image
- can be added to the image after the image is stored
- can be reviewed using CaplioViewer software
 - » ideal for those needing simplified workflow in the field
 - » use voice recording notes to QC, edit or input memo information

Collection

- GPS – remote location of feature
 - GPS is on camera, so GPS location reflects that location
 - Direction to create cone for field of view
 - » Manual entry using memo field
 - » GPS heading calculated from previous and present positions
 - Offset location using Direction and distance to create offset X,Y location for actual feature
 - » Manual or GPS direction
 - » Distance
 - » Fields can be left blank when no offset is desired

Collection

- Automated offset using Laser rangefinder interface to create offset location
 - Frees 2 memo fields
 - Input automated using Bluetooth
 - » easier workflow
 - » reduced errors
- Safer and faster to create offsets than to occupy some points

Collection

- Playback modes
 - Multiple thumbnails displayed for easy navigation through multiple images
 - Zoom and pan within image to verify details have been captured
 - All memo, laser, GPS and other information can be viewed in the field

Collection

■ Care and Maintenance

- Wash camera housing with water
- Lens wipes/Cotton T-Shirt
- Decon
 - » Ok to scrub with Bleach
 - » Waterproof camera bag for hazardous material conditions

■ Care and Maintenance

- Lens wipes
- Cotton T-Shirt
- Decontamination
 - » Ok to scrub with Bleach
 - » Waterproof camera bag



Processing

- Editing GPS information
 - GPS PhotoLink software allows editing of coordinates
 - » GPS lock accidentally left on
 - » Multipath, loss of real-time correction or other positioning errors
 - Shooting indoors for more than maximum allowed GPS lock time (10 minutes)

Processing

- GPS PhotoLink Ricoh Edition software by GeoSpatial Experts
 - Simple Wizard interface
 - Batch processing capability
 - Edit photos
 - Watermark photos (w/Logo)
 - Edit direction, distance, data
 - Create shapefile or personal GeoDatabase
 - Output Google Earth and .html format

Summary

- Rich 500SE camera allows
 - Capture of geo-referenced still photos and video
 - 5 memo field attributes plus audio notes
 - Interface with other devices
 - Flexibility in meeting GPS Accuracy requirements

Summary

- GeoSpatial Experts GPS PhotoLink Software allows:
 - Quick processing of Ricoh (or other) photos
 - Watermarked Photos
 - Multiple output format for creation of maps
 - » Google Earth
 - » Web-Based
 - » Shapefile or Personal GeoDatabase for GIS
 - Also, Processing of standard camera/GPS data

Questions...??

Cost...?

- Less than the cost of 1 day of labor to create a map of 24 photos that weren't GeoReferenced

Any Other Questions...??